Clinical Study

Factors associated with variability in length of sick leave because of acute low back pain in Chile

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Received 8 May 2009; revised 4 August 2009; accepted 16 September 2009

Abstract

BACKGROUND CONTEXT: Acute low back pain (LBP) is a frequent cause of physician visits and sick leave. Patients with longer sick leave account for most costs associated with LBP. Most research on risk factors for prolonged sick leave because of LBP has been done in Anglo-Saxon or Northern European populations with occupational LBP. Few studies have been conducted in less affluent Latin countries.

PURPOSE: To investigate the prevalence of acute LBP as a cause of sick leave and the variables associated with longer work absence (WA) because of acute LBP in Chile.

STUDY DESIGN: A retrospective study of nonoccupational sick leave certificates issued in a 1-year period by the Chilean Public Health System.

PATIENT SAMPLE: Ten thousand cases with nonoccupational sick leave certificates issued with the diagnosis of acute LBP.

OUTCOME MEASURES: Prevalence of acute LBP as a cause of sick leave, days of WA, and subsidy payment.

METHODS: A review of sick leave certificates from patients with different diagnoses was done to determine the prevalence of acute LBP as a cause of sick leave. We investigated whether age, gender, history of at least one episode of sick leave in the previous year because of acute LBP or because of other diagnoses, stipendiary subsidy paid (converted to US $), work activity, occupation, and the specialty of the attending physician influenced the length of sick leave.

RESULTS: Acute LBP represented 5.4\% of cases causing sick leave. Patients with acute LBP who had significantly longer sick leave than the rest of the population were patients with an episode of WA because of LBP in the previous year (14\% longer sick leave than patients without that history), manual workers (35\% longer than nonmanual workers), and patients seen by orthopedic surgeons (43\% longer than patients seen by other medical specialists). Nonpregnant women and men had similar durations of sick leave because of acute LBP.

CONCLUSIONS: Physicians who treat patients with LBP should be aware of these variables associated with longer sick leave because of acute LBP, which represents a significant burden to any society and is an important epidemiologic problem.

Keywords: Low back pain; Sick leave; Prevalence; Cost of Illness; Absenteeism

Introduction

Low back pain (LBP) is a prevalent public health problem. Acute LBP is one of the most frequent causes of physician visits [1,2] and is associated with an important socioeconomic burden [3–5]. During recent years, the economic costs associated with LBP have grown, mainly...
because of an increase in sickness and workers’ compensation claims [6].

An important part of the burden associated with acute LBP is sick leave [7–9] in spite of the recommendation that patients who suffer from acute LBP should stay active and continue normal activities, including work if possible [10–12]. A Dutch study reported that 20% of patients with LBP report absences from work [13].

Most patients with acute LBP can return to work after a short time, and the cases requiring longer sick leave account for most costs associated with LBP [14]. Prognostic factors for LBP disability have been reported by several studies [9,15,16]. Among the predictive factors that influence longer sick leave are psychosocial determinants (eg, attitudes, beliefs, mood state, anxiety, depression, social dysfunction, job satisfaction) [17,18], severity of disability [9,16,17], duration of pain before sick leave [16], gender [9], physically demanding work [18,19], age [9,15,18,19], and amount of compensation received [9,20]. Most of these studies have been performed in Anglo-Saxon or Northern European populations [1–8,13], and mainly patients with work-related LBP have been studied. However, legal, cultural, and sociodemographic differences may affect LBP-related disability [21,22] and physicians’ determination of the need for sick leave in these patients. Few studies have been performed in Hispanic countries to predict chronic disability related to acute LBP [23], and only one study has been conducted in a Latin American country, in a population of work-related LBP [24].

The aims of our study were to determine the prevalence of acute LBP as a cause of non–work-related sick leave in a middle- and low-income population of workers in Chile, to describe the sociodemographic characteristics of those patients, and to determine the factors associated with more prolonged sick leave. In addition, we estimated the annual expenditures associated with subsidy payments to Chilean patients with acute LBP.

Materials and methods

In Chile, patients with non–work-related diseases taking sick leave receive an official sick leave certificate. The sick leave certificates of patients affiliated with the Public Health System must be evaluated by the Commission of Preventive Medicine and Disability (COMPIN) for approval or rejection. If COMPIN resolves to accept the prescription of sick leave, the worker has the right to take sick leave and receive subsidy payments. It must be noted, however, that the first 3 days of sick leave are not paid for by insurance unless rest is prescribed for 11 days or longer; for example, if a patient takes sick leave for 5 days, he receives payment for 2 days.

The Chilean Public Health System (ChPHS) recorded 785,064 sick leave certificates because of non–work-related diseases in a population of 4,433,165 beneficiaries in 2005 [25]. These certificates were mainly for unique members; however, some of them may represent multiple claims from the same individual.

To obtain our sample, we randomly chose 10,000 sick leave certificates from patients with diagnoses of various non–work-related diseases, prescribed between October 2006 and October 2007. The inclusion criterion was a diagnosis of acute LBP (including diagnosis of LBP and lumbergo), which was defined as an episode that had lasted for less than 4 weeks [26] and was preceded and followed by at least 1 day at work, as proposed by de Vet et al. [27]. Exclusion criteria were diagnoses of work-related LBP (which in Chilean legislation is defined as an episode that starts related to a specific work event), pregnancy-related LBP [28], sciatica, and patients with a previous history of continuous sick leave secondary to LBP longer than 4 weeks in the previous year (not preceded and followed by at least 1 day at work) to study only patients with acute LBP.

To identify the factors associated with variability in length of sick leave in patients with acute LBP, we studied whether age, gender, history of a precedent sick leave certificate because of acute LBP or for other diagnoses in the previous year, amount of stipend paid (converted to US $), and the medical specialty of the attending physician who indicated the work absence (WA) were related to the length of sick leave prescribed. We also studied the different work activities and occupations of the population studied (Table 1) and their relation to the period of WA.

We calculated the expenditures associated with subsidy payments considering the total number of sick leave certificates in the study period, the prevalence of acute LBP among them, and the mean amount paid in subsidy for each patient with acute LBP.

Table 1

<table>
<thead>
<tr>
<th>Work activities/occupation</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work activities</td>
<td></td>
</tr>
<tr>
<td>Commercial</td>
<td>13.0</td>
</tr>
<tr>
<td>Construction</td>
<td>13.8</td>
</tr>
<tr>
<td>Finances</td>
<td>5.0</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>9.0</td>
</tr>
<tr>
<td>Public services</td>
<td>13.6</td>
</tr>
<tr>
<td>Transportation</td>
<td>10.9</td>
</tr>
<tr>
<td>Nonspecified</td>
<td>30.8</td>
</tr>
<tr>
<td>Others (minery, agriculture, and others)</td>
<td>3.9</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
</tr>
<tr>
<td>Occupation</td>
<td></td>
</tr>
<tr>
<td>Administrative</td>
<td>13.0</td>
</tr>
<tr>
<td>Manual worker</td>
<td>51.1</td>
</tr>
<tr>
<td>Professional</td>
<td>5.2</td>
</tr>
<tr>
<td>Salesperson</td>
<td>5.0</td>
</tr>
<tr>
<td>Technician</td>
<td>6.1</td>
</tr>
<tr>
<td>Others</td>
<td>19.6</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
</tr>
</tbody>
</table>
To obtain a representative sample size, using a margin of error of 5%, a confidence level of 95%, and a response distribution of 50%, the minimal sample size estimated was 384 patients with acute LBP. The statistical analyses were performed using STATA 10.0 (StataCorp LP, College Station, TX, USA).

To perform a multivariable analysis, a zero-truncated Poisson regression model was used for all observed covariates (age, gender, history of a precedent sick leave certificate because of acute LBP or for other diagnoses in the previous year, stipendiary subsidy paid, work activity, occupation, and the medical specialty of the attending physician who indicated the WA) to examine how they affected the target outcome (days of WA). All statistical comparisons were tested at the $\alpha=0.05$ level of significance.

Results

A total of 540 cases of acute LBP were found in our sample of 10,000 cases with sick leave (prevalence = 5.4%). The sociodemographic analysis of those patients showed that our sample was composed mainly of patients who were involved in manual labor (51.1%) and administrative work (13%); the most frequent work activities of the patients in our sample were construction, public services, and commercial activities (Table 1). The mean age of the sample studied was 36.1 ± 11.3 years (median, 35; range, 18–71), and the average period prescribed for sick leave was 7.10 ± 3.69 days (median, 7; range, 1–30) (Fig. 1). Female patients made up 221 of the cases studied (40.9%). Women and men presented similar ages, mean subsidy payments, and rates of previous sick leave for acute LBP. However, women presented a significantly higher prevalence of previous sick leave for diagnoses different from acute LBP, as shown in Table 2.

In the analyses of the variables associated with a longer sick leave, we found that patients with an episode of sick leave because of acute LBP in the previous year had an average of 7.86 days of WA, which was 14% longer than the mean WA of patients without that history (6.86 days) (incidence rate ratio [IRR], 1.14 [1.06–1.22]; $\alpha<0.05$). Manual workers had 7.38 days of WA on average, which is 35% longer sick leave than professional workers (5.10 days) (IRR, 1.35 [1.13–1.62]; $\alpha<0.05$). No other significant differences in WA length were found among the different work activities or occupation of the population studied.

The treating physicians indicated a mean of 6.8 days of WA when they were general practitioners, 9.1 days in the case of orthopedic surgeons, and 6.4 days in case of all other medical specialists together, as shown in Fig. 2. Patients attended by orthopedic surgeons had 43% longer indication for sick leaves than those seen by other medical specialists (IRR, 1.43 [1.26–1.61]; $\alpha<0.05$). No other significant difference was found in the analyses of the variables associated with a longer sick leave.

The mean subsidy cost for each patient was US $110.3 (median, 89.3; range, 0–553.7). Assuming a prevalence of 5.4% and a total of 786,064 patients with non–work-related sick leave certificates in a year, we estimate that the ChPHS spent US $4,681,954 on subsidy payments in the studied period.

Discussion

We report the first study of the prevalence of non–work-related sick leave because of acute LBP in Chile, using well-established diagnostic criteria [26,27]. Our results show a similar prevalence to previous studies performed in very different ethnic and sociodemographic populations [29,30] and correspond to 5.4% of sick leave cases in Chile. This is important as we used a strict definition for acute LBP, which has not been used in all studies previously published. Nonetheless, because patients with sciatica as opposed to those with just acute LBP were not included in this study, our results may underestimate the whole amount of workers on sick leave because of a lumbar pathology.

The duration of WA was found to be longer in patients with an episode of sick leave because of acute LBP in the previous year, in manual workers, and in patients who had been seen by an orthopedic surgeon relative to the rest of the population studied.

Several studies have demonstrated that the total economic impact of LBP in different countries is enormous [6,31,32]. Estimates of its economic costs in different countries vary greatly depending on the study methodology [33]. However, there is consensus that a small percentage of cases accounts for a high proportion of total expenditures, and identification of patients at risk for longer periods of disability can help to control the total costs associated with this condition [33]. Our study determined that a history of
an episode of sick leave because of LBP in the previous year is associated with longer WA. There is controversial evidence on the use of history of LBP as a prognostic factor for duration of sick leave: Wasiak et al. [34] have found that a history of LBP is a risk factor for WA; however, in a systematic review of the literature, Steenstra et al. [9] found that a history of LBP is not predictive of the duration of sick leave. Our study specifically evaluated the presence of a previous episode of WA because of acute LBP in the prior year, not just the history of LBP, which may explain our results. Future prospective studies should help to clarify this epidemiologic situation.

Heavy load work has been previously described as a predictor of longer duration of sick leave [9,16–18]. The current study found that manual workers (considered as those who perform heavy work) were prescribed longer sick leave periods than nonmanual workers. Our study specifically differentiated work activity and occupation, as the same work activity can be shared by patients with very different occupations (eg, industry can be a work activity for a manager or for a manual worker). Kinkade [35] advised staying active but avoiding heavy lifting, bending, twisting, and prolonged sitting for patients with LBP, as early return to productive activity has shown to decrease disability. However, as modification of work duties is not always possible for manual workers, this may explain their longer WA.

It has been reported that people of working age constitute a large proportion of physician visits for back symptoms, and up to 60% of patients with back pain are treated by primary care physicians [36]; our study is composed of a comparable population. In our study, patients seen by orthopedic surgeons received an indication of longer periods of sick leave than those seen by other physicians. Previous data show that specialists usually prescribe longer durations of WA than general physicians [8]. The patients seen by orthopedic surgeons may represent a subpopulation of more severe cases, which might explain that finding, as COMPIN does not make a difference to authorize different sick leave duration depending on the specialty of the physician who indicates the WA.

Our study could not evaluate the severity of LBP or disability, which are variables that have been found to be associated with the length of WA [8,16]. In addition, we did not evaluate psychosocial factors, which have been associated with prolonged disability in cases of LBP [15,17,18,37,38].

The current study did not find that age and gender were risk factors for prolonged sick leave. However, our study excluded pregnant patients. Previous data showing that the proportion of WAs related to LBP does not differ between nonpregnant women and men [26] were confirmed by our study.

The amount of compensation received is also considered a risk factor for longer sick leave because of LBP [9,20]. From our data, we cannot evaluate the effect of the Chilean regulation that warrants full subsidy payment only if sick leave is prescribed for 11 days or longer as a factor that may explain prescription of longer WA.

Finally, we also tried to determine the costs associated with subsidy payments for acute LBP in the ChPHS. We did not try to estimate the expenditures associated with direct health-care [4] or indirect costs, such as work absenteeism and loss of productivity, which are usually significantly higher [5,6]. We did not intend to estimate all the expenditures associated with subsidy payment related to LBP either, as our study specifically excluded patients with chronic LBP, which usually accounts for most back pain costs.

As our study included patients from the public health insurance system, which covers 70% of the Chilean population [39], the group studied is representative of

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**Table 2**

<table>
<thead>
<tr>
<th>Patients</th>
<th>All</th>
<th>Men</th>
<th>Women</th>
<th>p Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of cases (%)</td>
<td>540</td>
<td>319 (59.1)</td>
<td>221 (40.9)</td>
<td>.6</td>
</tr>
<tr>
<td>Age, y (mean±SD)</td>
<td>36.1±11.1</td>
<td>36.2±11.3</td>
<td>35.8±10.8</td>
<td>.1</td>
</tr>
<tr>
<td>Days of WA (mean±SD)</td>
<td>7.1±3.8</td>
<td>6.8±3.0</td>
<td>7.3±4.0</td>
<td>.5</td>
</tr>
<tr>
<td>Subsidy payment in US $ (mean±SD)</td>
<td>110.3±93.6</td>
<td>112.1±96.2</td>
<td>107.7±89.6</td>
<td>.2</td>
</tr>
<tr>
<td>Previous WA because of LBP, n (%)</td>
<td>129 (23)</td>
<td>70 (21)</td>
<td>59 (26)</td>
<td>&lt;.01</td>
</tr>
<tr>
<td>Previous WA because of other causes, n (%)</td>
<td>210 (61)</td>
<td>102 (31)</td>
<td>108 (48)</td>
<td></td>
</tr>
</tbody>
</table>

LBP, low back pain; SD, standard deviation; WA, work absence.

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Fig. 2. Days of prescribed sick leave because of acute low back pain grouped by medical specialty of attending physician.
a significant proportion of the Chilean population. Notably, this population of middle- and low-income workers obtained a mean subsidy payment for WA because of acute LBP equivalent to 38% of the minimal obligatory monthly stipend in Chile. This is a significant amount considering that the mean sick leave duration was 7.10 days, and the stipend paid covered only some days of disability in many cases.

Conclusions

In a Chilean population of patients with acute non–work-related LBP, those who had an episode of WA because of LBP in the previous year, manual workers, and patients treated by orthopedic surgeons presented longer sick leave durations than the rest of the population. Nonpregnant women and men had similar durations of sick leave because of acute LBP. The results from this study in a Chilean population are similar to those found in Anglo-Saxon and Northern European populations. All physicians who treat patients with LBP should be aware of these risk factors, as sick leave associated with LBP is a significant burden to any society and an important epidemiologic problem.

References